

(12) INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(19) World Intellectual Property Organization  
International Bureau



(43) International Publication Date  
18 January 2001 (18.01.2001)

PCT

(10) International Publication Number  
**WO 01/04060 A2**

(51) International Patent Classification<sup>7</sup>: C02F 3/00 (81) Designated States (*national*): AE, AG, AL, AM, AT, AT (utility model), AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CR, CU, CZ, CZ (utility model), DE, DE (utility model), DK, DK (utility model), DM, DZ, EE, EE (utility model), ES, FI, FI (utility model), GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KR (utility model), KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SK (utility model), SL, TJ, TM, TR, TT, TZ, UA, UG, US, UZ, VN, YU, ZA, ZW.

(21) International Application Number: PCT/FI00/00624

(22) International Filing Date: 6 July 2000 (06.07.2000)

(25) Filing Language: Finnish

(26) Publication Language: English

(30) Priority Data:  
991595 12 July 1999 (12.07.1999) FI

(71) Applicant (*for all designated States except US*): JUVE-GROUP OY [FI/FI]; Pahtajakuja 7, FIN-96400 Rovaniemi (FI).

(72) Inventors; and

(75) Inventors/Applicants (*for US only*): UOTILA, Jussi [FI/FI]; Kuusamontie 1176, FIN-96900 Saarenkylä (FI). ZAITSEV, Gennadi [BY/FI]; Sudentie 27 B 14, FIN-96500 Rovaniemi (FI).

(74) Agent: KOLSTER OY AB; Iso Roobertinkatu 23, P.O. Box 148, FIN-00121 Helsinki (FI).

Published:

- Without international search report and to be republished upon receipt of that report.
- With (an) indication(s) in relation to deposited biological material furnished under Rule 13bis separately from the description.

For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.

WO 01/04060 A2

(54) Title: METHOD OF PURIFYING WATER, SUITABLE BACTERIA FOR THE METHOD AND USE THEREOF

(57) Abstract: The invention relates to a method of purifying waste water biologically by using three particularly suitable bacteria: *Bacillus* sp. DT-1, *Pseudomonas azelaica*, DT-2, and/or *Rhizobus* sp. DT-5, or mixed populations thereof. The invention further relates to said bacteria and the mixed populations and use thereof in purifying waste water. The invention further relates to a bioreactor comprising said bacteria.

(12) INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(19) World Intellectual Property Organization  
International Bureau



(43) International Publication Date  
18 January 2001 (18.01.2001)

PCT

(10) International Publication Number  
**WO 01/04060 A3**

(51) International Patent Classification<sup>7</sup>: C02F 3/34, C12N 1/20 // (C12N 1/20, C12R 1:07, 1:38, 1:41)

CH, CN, CR, CU, CZ, CZ (utility model), DE, DE (utility model), DK, DK (utility model), DM, DZ, EE, EE (utility model), ES, FI, FI (utility model), GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KR (utility model), KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SK (utility model), SL, TJ, TM, TR, TT, TZ, UA, UG, US, UZ, VN, YU, ZA, ZW.

(21) International Application Number: PCT/FI00/00624

(84) Designated States (regional): ARIGO patent (GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZW), Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European patent (AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, GW, ML, MR, NE, SN, TD, TG).

(22) International Filing Date: 6 July 2000 (06.07.2000)

(25) Filing Language: Finnish

(26) Publication Language: English

(30) Priority Data:  
991595 12 July 1999 (12.07.1999) FI

(71) Applicant (for all designated States except US): JUVE-GROUP OY [FI/FI]; Pahtajakuja 7, FIN-96400 Rovaniemi (FI).

Published:

- with international search report
- with (an) indication(s) in relation to deposited biological material furnished under Rule 13bis separately from the description

(72) Inventors; and  
(75) Inventors/Applicants (for US only): UOTILA, Jussi [FI/FI]; Kuusamontie 1176, FIN-96900 Saarenkylä (FI). ZAITSEV, Gennadi [BY/FI]; Sudentie 27 B 14, FIN-96500 Rovaniemi (FI).

(74) Agent: KOLSTER OY AB; Iso Roobertinkatu 23, P.O. Box 148, FIN-00121 Helsinki (FI).

(88) Date of publication of the international search report:  
19 July 2001

For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.

(81) Designated States (national): AE, AG, AL, AM, AT, AT (utility model), AU, AZ, BA, BB, BG, BR, BY, BZ, CA,

WO 01/04060 A3

(54) Title: METHOD OF PURIFYING WATER, SUITABLE BACTERIA FOR THE METHOD AND USE THEREOF

(57) Abstract: The invention relates to a method of purifying waste water biologically by using three particularly suitable bacteria: *Bacillus* sp. DT-1, *Pseudomonas azelaica*, DT-2, and/or *Rhizobus* sp. DT-5, or mixed populations thereof. The invention further relates to said bacteria and the mixed populations and use thereof in purifying waste water. The invention further relates to a bioreactor comprising said bacteria.

## PATENT COOPERATION TREATY

## PCT

## INTERNATIONAL SEARCH REPORT

(PCT Article 18 and Rules 43 and 44)

Applicant's or agent's file reference <b>2990043PC/nu</b>	<b>FOR FURTHER ACTION</b> see Notification of Transmittal of International Search Report (Form PCT/ISA/220) as well as, where applicable, item 5 below.	
International application No. <b>PCT/FI 00/00624</b>	International filing date (day/month/year) <b>06/07/2000</b>	(Earliest) Priority Date (day/month/year) <b>12/07/1999</b>
Applicant <b>JUVEGROUP OY et al.</b>		

This International Search Report has been prepared by this International Searching Authority and is transmitted to the applicant according to Article 18. A copy is being transmitted to the International Bureau.

This International Search Report consists of a total of 2 sheets.

It is also accompanied by a copy of each prior art document cited in this report.

**1. Basis of the report**

a. With regard to the **language**, the international search was carried out on the basis of the international application in the language in which it was filed, unless otherwise indicated under this item.

the international search was carried out on the basis of a translation of the international application furnished to this Authority (Rule 23.1(b)).

b. With regard to any **nucleotide and/or amino acid sequence** disclosed in the international application, the international search was carried out on the basis of the sequence listing :

- contained in the international application in written form.
- filed together with the international application in computer readable form.
- furnished subsequently to this Authority in written form.
- furnished subsequently to this Authority in computer readable form.
- the statement that the subsequently furnished written sequence listing does not go beyond the disclosure in the international application as filed has been furnished.
- the statement that the information recorded in computer readable form is identical to the written sequence listing has been furnished

2.  Certain claims were found unsearchable (See Box I).

3.  Unity of invention is lacking (see Box II).

4. With regard to the **title**,

the text is approved as submitted by the applicant.

the text has been established by this Authority to read as follows:

5. With regard to the **abstract**,

the text is approved as submitted by the applicant.

the text has been established, according to Rule 38.2(b), by this Authority as it appears in Box III. The applicant may, within one month from the date of mailing of this international search report, submit comments to this Authority.

6. The figure of the **drawings** to be published with the abstract is Figure No.

as suggested by the applicant.

because the applicant failed to suggest a figure.

because this figure better characterizes the invention.

None of the figures.

# INTERNATIONAL SEARCH REPORT

International Application No

PCT/FI 00/00624

**A. CLASSIFICATION, SUBJECT MATTER**  
 IPC 7 C02F3/34 C12N1/20 // (C12N1/20, C12R1:07, C12R1:38, C12R1:41)

According to International Patent Classification (IPC) or to both national classification and IPC

**B. FIELDS SEARCHED**

Minimum documentation searched (classification system followed by classification symbols)

IPC 7 C02F C02C

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

EPO-Internal

**C. DOCUMENTS CONSIDERED TO BE RELEVANT**

Category °	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	US 5 679 568 A (IMAMURA TAKESHI ET AL) 21 October 1997 (1997-10-21) column 5, line 60 - line 66 ---	1-21
A	EP 0 915 061 A (REALCO 2001 S A N V) 12 May 1999 (1999-05-12) column 1 -column 3 ---	1-21
A	US 4 317 885 A (BLAIR JAMES E ET AL) 2 March 1982 (1982-03-02) column 8, line 56 - line 65 -----	1-21

Further documents are listed in the continuation of box C.

Patent family members are listed in annex.

° Special categories of cited documents :

- "A" document defining the general state of the art which is not considered to be of particular relevance
- "E" earlier document but published on or after the international filing date
- "L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)
- "O" document referring to an oral disclosure, use, exhibition or other means
- "P" document published prior to the international filing date but later than the priority date claimed

"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention

"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone

"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art.

"&" document member of the same patent family

Date of the actual completion of the international search

3 January 2001

Date of mailing of the international search report

06.02.01

Name and mailing address of the ISA

European Patent Office, P.B. 5818 Patentlaan 2  
NL - 2280 HV Rijswijk  
Tel: (+31-70) 340-2040, Tx. 31 651 epo nl,  
Fax: (+31-70) 340-3016

Authorized officer

P. Andersson

# INTERNATIONAL SEARCH REPORT

## Information on patent family members

Inte. .onal Application No

PCT/FI 00/00624

Patent document cited in search report		Publication date		Patent family member(s)		Publication date
US 5679568	A	21-10-1997		JP 8140665 A		04-06-1996
				JP 8141586 A		04-06-1996
				JP 8141549 A		04-06-1996
				DE 69516637 D		08-06-2000
				DE 69516637 T		21-09-2000
				EP 0712808 A		22-05-1996
				US 6017746 A		25-01-2000
<hr/>						
EP 0915061	A	12-05-1999		AU 9524698 A		10-05-1999
				WO 9920571 A		29-04-1999
				CN 1276771 T		13-12-2000
				EP 1025052 A		09-08-2000
<hr/>						
US 4317885	A	02-03-1982		US 4274954 A		23-06-1981
				US 4483923 A		20-11-1984
<hr/>						

BUDAPEST TREATY ON THE INTERNATIONAL  
COGNITION OF THE DEPOSIT OF MICROORGANISMS  
FOR THE PURPOSES OF PATENT PROCEDURE

## INTERNATIONAL FORM

Juvegroup Oy Ltd.  
Pahtajakuja 7  
FIN-96400 Rovaniemi

RECEIPT IN THE CASE OF AN ORIGINAL DEPOSIT  
issued pursuant to Rule 7.1 by the  
INTERNATIONAL DEPOSITORY AUTHORITY  
identified at the bottom of this page

<b>I. IDENTIFICATION OF THE MICROORGANISM</b>	
Identification reference given by the DEPOSITOR:  T-1	Accession number given by the INTERNATIONAL DEPOSITORY AUTHORITY:  DSM 12560
<b>II. SCIENTIFIC DESCRIPTION AND/OR PROPOSED TAXONOMIC DESIGNATION</b>	
<p>The microorganism identified under I. above was accompanied by:</p> <p><input type="checkbox"/> a scientific description  <input type="checkbox"/> a proposed taxonomic designation</p> <p>(Mark with a cross where applicable).</p>	
<b>III. RECEIPT AND ACCEPTANCE</b>	
<p>This International Depository Authority accepts the microorganism identified under I. above, which was received by it on 1998-12-01.  <small>(date of original deposit)</small></p>	
<b>IV. RECEIPT OF REQUEST FOR CONVERSION</b>	
<p>The microorganism identified under I. above was received by this International Depository Authority on (date of original deposit)          and a request to convert the original deposit to a deposit under the Budapest Treaty was received by it on (date of receipt of request for conversion).</p>	
<b>V. INTERNATIONAL DEPOSITORY AUTHORITY</b>	
Name: DSMZ-DEUTSCHE SAMMLUNG VON MIKROORGANISMEN UND ZELLKULTUREN GmbH  Address: Musteroder Weg 1b D-38124 Braunschweig	Signature(s) of person(s) having the power to represent the International Depository Authority or of authorized official(s):  <i>U. Weeke</i> Date: 1998-12-04

<sup>1</sup> Where Rule 6.4 (d) applies, such date is the date on which the status of international depository authority was acquired.

BUDAPESTER VERTRAG ÜBER DIE INTERNATIONALE  
ANERKENNUNG DER HINTERLEGUNG VON MIKROORGANISMEN  
FÜR DIE ZWECKE VON PATENTVERFAHREN

## INTERNATIONALES FORMBLATT

Juvegroup Oy Ltd.  
Pahtajakuja 7  
FIN-96400 Rovaniemi

EMPFANGSBESTÄTIGUNG BEI ERSTHINTERLEGUNG,  
ausgestellt gemäß Regel 7.1 von der unten angegebenen  
INTERNATIONALEN HINTERLEGUNGSSTELLE

<b>I. KENNZEICHNUNG DES MIKROORGANISMUS</b>	
Vom HINTERLEGER zugewiesenes Bezeichnungszeichen:  DT-2	Von der INTERNATIONALEN HINTERLEGUNGSSTELLE zugewiesene EINGANGSNUMMER:  DSM 12561
<b>II. WISSENSCHAFTLICHE BESCHREIBUNG UND/ODER VORGESCHLAGENE TAXONOMISCHE BEZEICHNUNG</b>	
<p>Mit dem unter I. bezeichneten Mikroorganismus wurde</p> <p><input type="checkbox"/> eine wissenschaftliche Beschreibung  <input type="checkbox"/> eine vorgeschlagene taxonomische Bezeichnung</p> <p>eingereicht (Zutreffendes ankreuzen).</p>	
<b>III. EINGANG UND ANNAHME</b>	
<p>Diese internationale Hinterlegungsstelle nimmt den unter I. bezeichneten Mikroorganismus an, der bei ihr am 1998-12-01 (Datum der Ersthinterlegung)<sup>1</sup> eingegangen ist.</p>	
<b>IV. EINGANG DES ANTRAGS AUF UMWANDLUNG</b>	
<p>Der unter I. bezeichnete Mikroorganismus ist bei dieser internationalen Hinterlegungsstelle am eingegangen (Datum der Ersthinterlegung) und ein Antrag auf Umwandlung dieser Ersthinterlegung in eine Hinterlegung gemäß Budapest Vertrag ist am eingegangen (Datum des Eingangs des Antrags auf Umwandlung).</p>	
<b>V. INTERNATIONALE HINTERLEGUNGSSTELLE</b>	
Name: DSMZ-DEUTSCHE SAMMLUNG VON MIKROORGANISMEN UND ZELLKULTUREN GmbH  Anschrift: Mascheroder Weg 1b D-38124 Braunschweig	Unterschrift(en) der zur Verwaltung der internationalen Hinterlegungsstelle befugten Person(en) oder des (der) von ihr ermächtigten Bediensteten:  <i>V. Weiss</i> Datum: 1998-12-04

<sup>1</sup> Falls Regel 6.4 Buchstabe d zutrifft, ist dies der Zeitpunkt, zu dem der Status einer internationalen Hinterlegungsstelle erworben worden ist.

BUDAPEST TREATY ON THE INTERNATIONAL  
RECOGNITION OF THE DEPOSIT OF MICROORGANISMS  
FOR THE PURPOSES OF PATENT PROCEDURE

## INTERNATIONAL FORM

Juvegroup Oy Ltd.  
Pahtajakuja 7  
FIN-96400 Rovaniemi

RECEIPT IN THE CASE OF AN ORIGINAL DEPOSIT  
issued pursuant to Rule 7.1 by the  
INTERNATIONAL DEPOSITORY AUTHORITY  
identified at the bottom of this page

<b>I. IDENTIFICATION OF THE MICROORGANISM</b>	
Identification reference given by the DEPOSITOR: <b>L-5</b>	Accession number given by the INTERNATIONAL DEPOSITORY AUTHORITY: <b>DSM 12562</b>
<b>II. SCIENTIFIC DESCRIPTION AND/OR PROPOSED TAXONOMIC DESIGNATION</b>	
The microorganism identified under I. above was accompanied by:  <input type="checkbox"/> a scientific description <input type="checkbox"/> a proposed taxonomic designation  (Mark with a cross where applicable).	
<b>III. RECEIPT AND ACCEPTANCE</b>	
The International Depository Authority accepts the microorganism identified under I. above, which was received by it on <b>1998-12-01</b> <small>(date of original deposit)</small> .	
<b>IV. RECEIPT OF REQUEST FOR CONVERSION</b>	
The microorganism identified under I. above was received by this International Depository Authority on <b>(date of original deposit)</b> and a request to convert the original deposit to a deposit under the Budapest Treaty was received by it on <b>(date of receipt of request for conversion)</b> .	
<b>V. INTERNATIONAL DEPOSITORY AUTHORITY</b>	
Name: <b>DSMZ-DEUTSCHE SAMMLUNG VON MIKROORGANISMEN UND ZELLKULTUREN GmbH</b>  Address: <b>Mascheroder Weg 1b D-38124 Braunschweig</b>	Signature(s) of person(s) having the power to represent the International Depository Authority or of authorized official(s):   <b>J. Weis</b> Date: <b>1998-12-04</b>

<sup>1</sup> Where Rule 6.4 (d) applies, such date is the date on which the status of international depository authority was acquired.

BUDAPEST TREATY ON THE INTERNATIONAL  
RECOGNITION OF THE DEPOSIT OF MICROORGANISMS  
FOR THE PURPOSES OF PATENT PROCEDURE

## INTERNATIONAL FORM

Juvegroup Oy Ltd.  
Pahtajakuja 7

Rovaniemi 96400  
Finland

RECEIPT IN THE CASE OF AN ORIGINAL DEPOSIT  
issued pursuant to Rule 7.1 by the  
INTERNATIONAL DEPOSITORY AUTHORITY  
identified at the bottom of this page

<b>I. IDENTIFICATION OF THE MICROORGANISM</b>	
Identification reference given by the DEPOSITOR:  DT-6	Accession number given by the INTERNATIONAL DEPOSITORY AUTHORITY:  DSM 13516
<b>II. SCIENTIFIC DESCRIPTION AND/OR PROPOSED TAXONOMIC DESIGNATION</b>	
<p>The microorganism identified under I. above was accompanied by:</p> <p><input checked="" type="checkbox"/> a scientific description  <input checked="" type="checkbox"/> a proposed taxonomic designation</p> <p>(Mark with a cross where applicable).</p>	
<b>III. RECEIPT AND ACCEPTANCE</b>	
<p>This International Depository Authority accepts the microorganism identified under I. above, which was received by it on 2000-05-29 (Date of the original deposit)<sup>1</sup>.</p>	
<b>IV. RECEIPT OF REQUEST FOR CONVERSION</b>	
<p>The microorganism identified under I. above was received by this International Depository Authority on (date of original deposit) and a request to convert the original deposit to a deposit under the Budapest Treaty was received by it on (date of receipt of request for conversion).</p>	
<b>V. INTERNATIONAL DEPOSITORY AUTHORITY</b>	
Name: DSMZ-DEUTSCHE SAMMLUNG VON MIKROORGANISMEN UND ZELLKULTUREN GmbH  Address: Mascheroder Weg 1b D-38124 Braunschweig	Signature(s) of person(s) having the power to represent the International Depository Authority or of authorized official(s):  <i>V. We-Ls</i> Date: 2000-06-05

<sup>1</sup> Where Rule 6.4 (d) applies, such date is the date on which the status of international depository authority was acquired.

BUDAPEST TREATY ON THE INTERNATIONAL  
RECOGNITION OF THE DEPOSIT OF MICROORGANISMS  
FOR THE PURPOSES OF PATENT PROCEDURE

## INTERNATIONAL FORM

Juvegroup Oy Ltd.  
Pahtajakuja 7

Rovaniemi 96400  
Finland

RECEIPT IN THE CASE OF AN ORIGINAL DEPOSIT  
Issued pursuant to Rule 7.1 by the  
INTERNATIONAL DEPOSITORY AUTHORITY  
identified at the bottom of this page

<b>I. IDENTIFICATION OF THE MICROORGANISM</b>	
Identification reference given by the DEPOSITOR:  DT-10	Accession number given by the INTERNATIONAL DEPOSITORY AUTHORITY:  DSM 13517
<b>II. SCIENTIFIC DESCRIPTION AND/OR PROPOSED TAXONOMIC DESIGNATION</b>	
<p>The microorganism identified under I. above was accompanied by:</p> <p><input checked="" type="checkbox"/> a scientific description  <input checked="" type="checkbox"/> a proposed taxonomic designation</p> <p>(Mark with a cross where applicable).</p>	
<b>III. RECEIPT AND ACCEPTANCE</b>	
<p>This International Depository Authority accepts the microorganism identified under I. above, which was received by it on 2000-05-29 (Date of the original deposit)<sup>1</sup>.</p>	
<b>IV. RECEIPT OF REQUEST FOR CONVERSION</b>	
<p>The microorganism identified under I. above was received by this International Depository Authority on (date of original deposit) and a request to convert the original deposit to a deposit under the Budapest Treaty was received by it on (date of receipt of request for conversion).</p>	
<b>V. INTERNATIONAL DEPOSITORY AUTHORITY</b>	
Name: DSMZ-DEUTSCHE SAMMLUNG VON MIKROORGANISMEN UND ZELLKULTUREN GmbH  Address: Mascheroder Weg 1b D-38124 Braunschweig	Signature(s) of person(s) having the power to represent the International Depository Authority or of authorized official(s):  <i>V. Weis</i> Date: 2000-06-05

<sup>1</sup> Where Rule 6.4 (d) applies, such date is the date on which the status of international depository authority was acquired.

BUDAPEST TREATY ON THE INTERNATIONAL  
RECOGNITION OF THE DEPOSIT OF MICROORGANISMS  
FOR THE PURPOSES OF PATENT PROCEDURE

## INTERNATIONAL FORM

Juvegroup Oy Ltd.  
Pahtajakuja 7

Rovaniemi 96400  
Finland

RECEIPT IN THE CASE OF AN ORIGINAL DEPOSIT  
issued pursuant to Rule 7.1 by the  
INTERNATIONAL DEPOSITORY AUTHORITY  
identified at the bottom of this page

<b>I. IDENTIFICATION OF THE MICROORGANISM</b>	
Identification reference given by the DEPOSITOR:  DT-12	Accession number given by the INTERNATIONAL DEPOSITORY AUTHORITY:  DSM 13518
<b>II. SCIENTIFIC DESCRIPTION AND/OR PROPOSED TAXONOMIC DESIGNATION</b>	
<p>The microorganism identified under I. above was accompanied by:</p> <p><input checked="" type="checkbox"/> a scientific description  <input checked="" type="checkbox"/> a proposed taxonomic designation</p> <p>(Mark with a cross where applicable).</p>	
<b>III. RECEIPT AND ACCEPTANCE</b>	
<p>This International Depository Authority accepts the microorganism identified under I. above, which was received by it on 2000-05-29 (Date of the original deposit)<sup>1</sup>.</p>	
<b>IV. RECEIPT OF REQUEST FOR CONVERSION</b>	
<p>The microorganism identified under I. above was received by this International Depository Authority on (date of original deposit) and a request to convert the original deposit to a deposit under the Budapest Treaty was received by it on (date of receipt of request for conversion).</p>	
<b>V. INTERNATIONAL DEPOSITORY AUTHORITY</b>	
Name: DSMZ-DEUTSCHE SAMMLUNG VON MIKROORGANISMEN UND ZELLKULTUREN GMBH  Address: Mascheroder Weg 1b D-38124 Braunschweig	Signature(s) of person(s) having the power to represent the International Depository Authority or of authorized official(s):  <i>U. Weis</i> Date: 2000-06-05

<sup>1</sup> Where Rule 6.4 (d) applies, such date is the date on which the status of international depository authority was acquired.

BUDAPEST TREATY ON THE INTERNATIONAL  
RECOGNITION OF THE DEPOSIT OF MICROORGANISMS  
FOR THE PURPOSES OF PATENT PROCEDURE

## INTERNATIONAL FORM

Juvegroup Oy Ltd.  
Pahtajakuja 7

Rovaniemi 96400  
Finland

RECEIPT IN THE CASE OF AN ORIGINAL DEPOSIT  
issued pursuant to Rule 7.1 by the  
INTERNATIONAL DEPOSITORY AUTHORITY  
identified at the bottom of this page

<b>I. IDENTIFICATION OF THE MICROORGANISM</b>	
Identification reference given by the DEPOSITOR: <b>DT-13</b>	Accession number given by the INTERNATIONAL DEPOSITORY AUTHORITY: <b>DSM 13519</b>
<b>II. SCIENTIFIC DESCRIPTION AND/OR PROPOSED TAXONOMIC DESIGNATION</b>	
The microorganism identified under I. above was accompanied by:  <input checked="" type="checkbox"/> a scientific description <input checked="" type="checkbox"/> a proposed taxonomic designation  (Mark with a cross where applicable).	
<b>III. RECEIPT AND ACCEPTANCE</b>	
This International Depository Authority accepts the microorganism identified under I. above, which was received by it on <b>2000-05-29</b> (Date of the original deposit).  <b>IV. RECEIPT OF REQUEST FOR CONVERSION</b>	
The microorganism identified under I. above was received by this International Depository Authority on (date of original deposit) and a request to convert the original deposit to a deposit under the Budapest Treaty was received by it on (date of receipt of request for conversion).  <b>V. INTERNATIONAL DEPOSITORY AUTHORITY</b>	
Name: <b>DSMZ-DEUTSCHE SAMMLUNG VON MIKROORGANISMEN UND ZELLKULTUREN GmbH</b>  Address: <b>Mascheroder Weg 1b D-38124 Braunschweig</b>	Signature(s) of person(s) having the power to represent the International Depository Authority or of authorized official(s):   Date: <b>2000-06-05</b>

<sup>1</sup> Where Rule 6.4 (d) applies, such date is the date on which the status of international depository authority was acquired.

# PATENT COOPERATION TREATY

## PCT

### INTERNATIONAL PRELIMINARY EXAMINATION REPORT



(PCT Article 36 and Rule 70)

Applicant's or agent's file reference 2990043PC/nu	<b>FOR FURTHER ACTION</b>	See Notification of Transmittal of International Preliminary Examination Report (Form PCT/IPEA/416)
International application No. PCT/FI00/00624	International filing date (day/month/year) 06/07/2000	Priority date (day/month/year) 12/07/1999
International Patent Classification (IPC) or national classification and IPC C02F3/00		
<b>Applicant</b> JUVEGROUP OY et al.		
1. This international preliminary examination report has been prepared by this International Preliminary Examining Authority and is transmitted to the applicant according to Article 36.  2. This REPORT consists of a total of 6 sheets, including this cover sheet.  <input checked="" type="checkbox"/> This report is also accompanied by ANNEXES, i.e. sheets of the description, claims and/or drawings which have been amended and are the basis for this report and/or sheets containing rectifications made before this Authority (see Rule 70.16 and Section 607 of the Administrative Instructions under the PCT).  These annexes consist of a total of 2 sheets.		
3. This report contains indications relating to the following items:  I <input checked="" type="checkbox"/> Basis of the report II <input type="checkbox"/> Priority III <input checked="" type="checkbox"/> Non-establishment of opinion with regard to novelty, inventive step and industrial applicability IV <input type="checkbox"/> Lack of unity of invention V <input checked="" type="checkbox"/> Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement VI <input type="checkbox"/> Certain documents cited VII <input type="checkbox"/> Certain defects in the international application VIII <input type="checkbox"/> Certain observations on the international application		

Date of submission of the demand 02/02/2001	Date of completion of this report 16.10.2001
Name and mailing address of the international preliminary examining authority: European Patent Office D-80298 Munich Tel. +49 89 2399 - 0 Tx: 523656 epmu d Fax: +49 89 2399 - 4465	Authorized officer Borello, E Telephone No. +49 89 2399 7378



**INTERNATIONAL PRELIMINARY  
EXAMINATION REPORT**

International application No. PCT/FI00/00624

**I. Basis of the report**

1. With regard to the **elements** of the international application (*Replacement sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to this report since they do not contain amendments (Rules 70.16 and 70.17)*):

**Description, pages:**

1-20                   as originally filed

**Claims, No.:**

1-19                   with telefax of                   06/09/2001

**Drawings, sheets:**

1/10-10/10           as originally filed

2. With regard to the **language**, all the elements marked above were available or furnished to this Authority in the language in which the international application was filed, unless otherwise indicated under this item.

These elements were available or furnished to this Authority in the following language: , which is:

- the language of a translation furnished for the purposes of the international search (under Rule 23.1(b)).
- the language of publication of the international application (under Rule 48.3(b)).
- the language of a translation furnished for the purposes of international preliminary examination (under Rule 55.2 and/or 55.3).

3. With regard to any **nucleotide and/or amino acid sequence** disclosed in the international application, the international preliminary examination was carried out on the basis of the sequence listing:

- contained in the international application in written form.
- filed together with the international application in computer readable form.
- furnished subsequently to this Authority in written form.
- furnished subsequently to this Authority in computer readable form.
- The statement that the subsequently furnished written sequence listing does not go beyond the disclosure in the international application as filed has been furnished.
- The statement that the information recorded in computer readable form is identical to the written sequence listing has been furnished.

4. The amendments have resulted in the cancellation of:

- the description,           pages:
- the claims,                   Nos.:           20,21

**INTERNATIONAL PRELIMINARY  
EXAMINATION REPORT**

International application No. PCT/FI00/00624

the drawings, sheets:

5.  This report has been established as if (some of) the amendments had not been made, since they have been considered to go beyond the disclosure as filed (Rule 70.2(c));  
*(Any replacement sheet containing such amendments must be referred to under item 1 and annexed to this report.)*

6. Additional observations, if necessary:  
**see separate sheet**

**III. Non-establishment of opinion with regard to novelty, inventive step and industrial applicability**

1. The questions whether the claimed invention appears to be novel, to involve an inventive step (to be non-obvious), or to be industrially applicable have not been examined in respect of:

the entire international application.

claims Nos. 1\*,4\*,5\*,6\*,7\*,8\*,9\*,10\*,11\*,12\*,13\*,15\*,16\* (\*partly).

because:

the said international application, or the said claims Nos. 1\*,4\*,5\*,6\*,7\*,8\*,9\*,10\*,11\*,12\*,13\*,15\*,16\* (\*partly) relate to the following subject matter which does not require an international preliminary examination (*specify*):  
**see separate sheet**

the description, claims or drawings (*indicate particular elements below*) or said claims Nos. are so unclear that no meaningful opinion could be formed (*specify*):

the claims, or said claims Nos. are so inadequately supported by the description that no meaningful opinion could be formed.

no international search report has been established for the said claims Nos. .

2. A meaningful international preliminary examination cannot be carried out due to the failure of the nucleotide and/or amino acid sequence listing to comply with the standard provided for in Annex C of the Administrative Instructions:

the written form has not been furnished or does not comply with the standard.

the computer readable form has not been furnished or does not comply with the standard.

**V. Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement**

1. Statement

**INTERNATIONAL PRELIMINARY  
EXAMINATION REPORT**

International application No. PCT/FI00/00624

Novelty (N)	Yes:	Claims	1*,2-3,4*,5*,6*,7*,8*,9*,10*,11*,12*,13*,14,15*,16*,17-19 (*partly)
	No:	Claims	
Inventive step (IS)	Yes:	Claims	1*,2-3,4*,5*,6*,7*,8*,9*,10*,11*,12*,13*,14,15*,16*,17-19 (*partly)
	No:	Claims	
Industrial applicability (IA)	Yes:	Claims	1*,2-3,4*,5*,6*,7*,8*,9*,10*,11*,12*,13*,14,15*,16*,17-19 (*partly)
	No:	Claims	

2. Citations and explanations  
**see separate sheet**

**INTERNATIONAL PRELIMINARY  
EXAMINATION REPORT - SEPARATE SHEET**

International application No. PCT/FI00/00624

**R It m I**

**Basis of the opinion**

1. The basis of the international Preliminary Examination Report is the translation (Rule 12.3(a)(i)PCT) of the application as filed. A part of the application, as specified under Item III, has not been subject to the preliminary examination.

**Re Item III**

**Non-establishment of opinion with regard to novelty, inventive step and industrial applicability**

1. The alternative "progeny" of the claimed micro-organisms are not considered to meet the requirements of Rule 13bis.3(a)PCT.  
Claims defined by a reference to a group of microorganisms, namely species or genus, cannot be accepted under Art. 5 PCT and Art. 6PCT: **no meaningful opinion** can be formed on the **part of claims 1,4-3,15 and 6 relating to progeny of deposited micro-organisms** (Art. 34(4)(a)(ii)PCT and Art. 35(3)(a)PCT).

**Re Item V**

**Reasoned statement under Rule 66.2(a)(ii) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement**

1. Reference is made to the following documents:

D1: US-A-5 679 568 (IMAMURA TAKESHI ET AL) 21 October 1997  
D2: EP-A-0 915 061 (REALCO 2001 S A N V) 12 May 1999  
D3: US-A-4 317 885 (BLAIR JAMES E ET AL) 2 March 1982

2 Prior art

- 2.a D1 discloses a water treatment process for the biologically decomposition of halogenated organic acids. The process uses microorganisms including bacteria of genus *Pseudomonas* and *Xanthobacter*.
- 2.b D2 discloses a process for removing the effects of detergents upon germination and/or growth of micro-organisms of genus *Bacillus*. The inhibitory effect was detected with concentration of detergents between 1-50 ppm.

**INTERNATIONAL PRELIMINARY  
EXAMINATION REPORT - SEPARATE SHEET**

---

International application No. PCT/FI00/00624

2.c D3 discloses a process for removing detergents from wastewater (up to 520 ppm) using the strain *Pseudomonas fluorescens* 3P (deposited at the American Type Culture Collection under the accession number, ATCC-31483).

**3. Novelty**

The invention defined in claims 1-19 shall be considered novel, since it is not anticipated by the prior art (Art. 33(2)PCT). Namely none of the microorganisms claimed according to Rule 13bisPCT is known from the prior art at hand.

**4. Inventive step**

4.a The invention defined in claims 5-13 shall be considered to involve an inventive step, since, having regard to the prior art (Art. 33(3)PCT), it is not obvious to the skilled person (Art. 33(3)PCT). Each of the novel microorganisms seems to effectively contribute to the purification of wastewater.

4.b The application shows that the **mixed population as defined in claims 1, 14 and 15** solves a problem: the examples 1-8 in the description show evidence that the mixed population can be used in a process to purify wastewater in a bioreactor. The mixed population of microorganisms show the advantage of being facultative aerobic.

The findings of the available prior art would not lead the skilled person to the use of the claimed mixed population of microorganisms in a wastewater process or in a bioreactor.

Therefore the invention defined in claims 1, 14 and 15 can be considered to involve an inventive step (Art. 33(3)PCT).

4.c The same applies to the dependent claims 2-4, 16-19 (Art. 33(3)PCT).

## PATENT COOPERATION TREATY

PCT

NOTIFICATION OF THE RECORDING  
OF A CHANGE(PCT Rule 92bis.1 and  
Administrative Instructions, Section 422)

Date of mailing (day/month/year)

16 November 2001 (16.11.01)

From the INTERNATIONAL BUREAU

To:

KOLSTER OY AB  
Iso Roobertinkatu 23  
P.O. Box 148  
FIN-00121 Helsinki  
FINLAND

Applicant's or agent's file reference

2990043PC/nu

## IMPORTANT NOTIFICATION

International application No.

PCT/FI00/00624

International filing date (day/month/year)

06 July 2000 (06.07.00)

## 1. The following indications appeared on record concerning:

the applicant     the inventor     the agent     the common representative

Name and Address

JUVEGROUP OY  
Pahtajakuja 7  
FIN-96400 Rovaniemi  
Finland

State of Nationality

FI

State of Residence

FI

Telephone No.

Facsimile No.

Teleprinter No.

## 2. The International Bureau hereby notifies the applicant that the following change has been recorded concerning:

the person     the name     the address     the nationality     the residence

Name and Address

OY CLEWER LTD  
Raidetie 1-3  
FIN-96900 Saarenkylä  
Finland

State of Nationality

FI

State of Residence

FI

Telephone No.

Facsimile No.

Teleprinter No.

## 3. Further observations, if necessary:

## 4. A copy of this notification has been sent to:

 the receiving Office the designated Offices concerned the International Searching Authority the elected Offices concerned the International Preliminary Examining Authority other:

The International Bureau of WIPO  
34, chemin des Colombettes  
1211 Geneva 20, Switzerland

Authorized officer

Marie-José DEVILLARD

Facsimile No.: (41-22) 740.14.35

Telephone No.: (41-22) 338.83.38

## PATENT COOPERATION TREATY

From the INTERNATIONAL BUREAU

PCT

NOTIFICATION OF ELECTION  
(PCT Rule 61.2)

Date of mailing (day/month/year) 21 March 2001 (21.03.01)	To:  Commissioner US Department of Commerce United States Patent and Trademark Office, PCT 2011 South Clark Place Room CP2/5C24 Arlington, VA 22202 ETATS-UNIS D'AMERIQUE in its capacity as elected Office
International application No. PCT/FI00/00624	Applicant's or agent's file reference 2990043PC/nu
International filing date (day/month/year) 06 July 2000 (06.07.00)	Priority date (day/month/year) 12 July 1999 (12.07.99)
Applicant UOTILA, Jussi et al	

1. The designated Office is hereby notified of its election made:

in the demand filed with the International Preliminary Examining Authority on:

02 February 2001 (02.02.01)

in a notice effecting later election filed with the International Bureau on:

\_\_\_\_\_

2. The election  was

was not

made before the expiration of 19 months from the priority date or, where Rule 32 applies, within the time limit under Rule 32.2(b).

The International Bureau of WIPO 34, chemin des Colombettes 1211 Geneva 20, Switzerland	Authorized officer  Charlotte ENGER  Telephone No.: (41-22) 338.83.38
Facsimile No.: (41-22) 740.14.35	

# PATENT COOPERATION TREATY

25-01-2001  
From the INTERNATIONAL BUREAU

PCT

## NOTICE INFORMING THE APPLICANT OF THE COMMUNICATION OF THE INTERNATIONAL APPLICATION TO THE DESIGNATED OFFICES

(PCT Rule 47.1(c), first sentence)

Date of mailing (day/month/year) 18 January 2001 (18.01.01)		
Applicant's or agent's file reference 2990043PC/nu	IMPORTANT NOTICE	
International application No. PCT/FI00/00624	International filing date (day/month/year) 06 July 2000 (06.07.00)	Priority date (day/month/year) 12 July 1999 (12.07.99)
Applicant JUVEGROUP OY et al		

1. Notice is hereby given that the International Bureau has communicated, as provided in Article 20, the international application to the following designated Offices on the date indicated above as the date of mailing of this Notice:  
**AG,AU,BZ,DZ,KP,KR,MZ,US**

In accordance with Rule 47.1(c), third sentence, those Offices will accept the present Notice as conclusive evidence that the communication of the international application has duly taken place on the date of mailing indicated above and no copy of the international application is required to be furnished by the applicant to the designated Office(s).

2. The following designated Offices have waived the requirement for such a communication at this time:

**AE,AL,AM,AP,AT,AZ,BA,BB,BG,BR,BY,CA,CH,CN,CR,CU,CZ,DE,DK,DM,EA,EE,EP,ES,FI,GB,GD,  
GE,GH,GM,HR,HU,IL,IN,IS,JP,KE,KG,KZ,LC,LK,LR,LS,LT,LU,LV,MA,MD,MG,MK,MN,MW,MX,  
NO,NZ,OA,PL,PT,RO,RU,SD,SE,SG,SI,SK,SL,TJ,TM,TR,TT,TZ,UA,UG,UZ,VN,YU,ZA,ZW**  
The communication will be made to those Offices only upon their request. Furthermore, those Offices do not require the applicant to furnish a copy of the international application (Rule 49.1(a-bis)).

3. Enclosed with this Notice is a copy of the international application as published by the International Bureau on 18 January 2001 (18.01.01) under No. WO 01/04060

### REMINDER REGARDING CHAPTER II (Article 31(2)(a) and Rule 54.2)

If the applicant wishes to postpone entry into the national phase until 30 months (or later in some Offices) from the priority date, a demand for international preliminary examination must be filed with the competent International Preliminary Examining Authority before the expiration of 19 months from the priority date.

It is the applicant's sole responsibility to monitor the 19-month time limit.

Note that only an applicant who is a national or resident of a PCT Contracting State which is bound by Chapter II has the right to file a demand for international preliminary examination.

### REMINDER REGARDING ENTRY INTO THE NATIONAL PHASE (Article 22 or 39(1))

If the applicant wishes to proceed with the international application in the national phase, he must, within 20 months or 30 months, or later in some Offices, perform the acts referred to therein before each designated or elected Office.

For further important information on the time limits and acts to be performed for entering the national phase, see the Annex to Form PCT/IB/301 (Notification of Receipt of Record Copy) and Volume II of the PCT Applicant's Guide.

The International Bureau of WIPO 34, chemin des Colombettes 1211 Geneva 20, Switzerland	Authorized officer  J. Zahra
Facsimile No. (41-22) 740.14.35	Telephone No. (41-22) 338.83.38